SOUTHWESTERN

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Southwestern MEDICINE

OFFICIAL JOURNAL OF THE SOUTHWESTERN MEDICAL ASSOCIATION AND THE EL PASO COUNTY MEDICAL SOCIETY

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May 1949

ATTEND THE NEW MEXICO MEDICAL SOCIETY MEETING MAY 5th-7th IN ROSWELL

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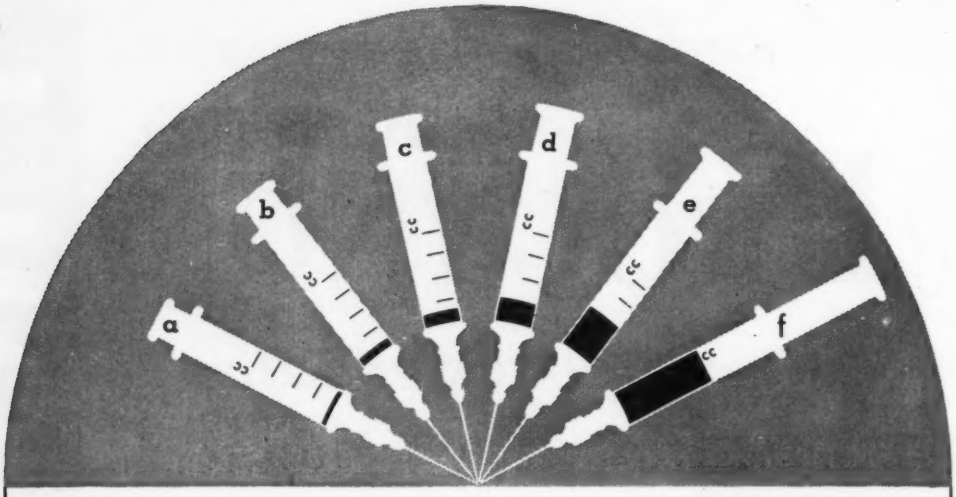

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COMPLETE NEW MEXICO MEDICAL SOCIETY MEETING PROGRAM ANNOUNCED

The complete program for the annual meeting of the New Mexico Medical Society, May 5-7, in Roswell has been announced by Dr. Van A. Odle, president of the Chaves County Medical Society, sponsor of the convention.

Papers will be delivered by seven outstanding medical speakers from all sections of the nation; and prominent physicians from New Mexico and the Southwest will lead the discussions during the three-day session.

There will be a complete program for the entertainment of visiting doctors' wives.

The guest speakers will be:

J. Mackenzie Brown, M. D., Professor of Otolaryngolcgy, University of Southern California Medical School, Los Angeles, California.

M. Edward Davis, M. D. Joseph B. DeLee Professor of Obstetrics and Gynecology, Chicago, Illinois.

T. Leon Howard, M. D., Associate Professor Urology, University of Colorado, Denver, Colorado.

E. Starr Judd, Jr., M. D. Head of Section in Division in Surgery, Mayo Clinic, Rochester, Minnesota.

F. T. Keating, Jr., M. D., Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Earl D. McBride, M. D., Associate Professor Orthopedic Surgery, University of Oklahoma School of Medicine.

Armand J. Quick, M. D., Department of Biochemistry, Marquette University School of Medicine, Milwaukee, Wisconsin.

THE PROGRAM

THURSDAY, MAY 5th

9:00 A.M.—Meeting House of Delegates.
Opening Address: P. L. Travers, M. D., President New Mexico State Medical Society.
Welcoming Address: Van A. Odle, M. D., President Chaves County Medical Society.

Order of Business:
P. L. Travers, M. D., presiding

2:00-2:45 P.M.—Subject: Deafness.
Speaker: J. Mackenzie Brown, M. D.
2:45-3:00 P.M.—Discussion: Maurice Spearman, M. D., El Paso, Texas.
3:00-3:45 P.M.—Subject: Disability Evaluation.
Speaker: Earl D. McBride, M. D.
3:45-4:00 P.M.—Discussion: Dr. Edward Parnall, Albuquerque, N. M.
4:45-4:45 P.M.—Subject: Venous Thrombosis.
Speaker: Armand J. Quick.
4:45-5:00 P.M.—Discussion: Angus McKinnon, M. D., Albuquerque, N. M.

FRIDAY, MAY 6th

J. W. Hannett, M. D., presiding
9:00-9:45 A.M.—Subject: The Broadening Scope of Gastric Resection.
Speaker: E. Starr Judd, Jr., M. D.
9:45-10:00 A.M.—Discussion: John F. Conway, M. D., Clovis, N. M.
10:00-10:45 A.M.—Subject: Cystitis.
Speaker: T. Leon Howard, M. D.
10:45-11:00 A.M.—Discussion: A. W. Multhauf, M. D., El Paso, Texas.
11:00-11:45 A.M.—Subject: The Clinical Diagnosis of Hyperthyroidism.
Speaker: F. R. Keating, Jr., M. D.
11:45-12:00 Noon—Discussion: Ross W. Rissler, M. D., El Paso, Texas.
LUNCHEON—C. H. Gellenthein, M. D., presiding.
Medical: Drs. Keating and Quick.
Surgical: Drs. Davis, Howard, Judd, McBride.
ENT: Dr. Brown.
Leland Evans, M. D., presiding.
2:00-2:45 P.M.—Subject: Emergency Surgical Procedures on Intestinal Lesions.
Speaker: E. Starr Judd, Jr., M. D.
2:45-3:00 P.M.—Discussion: Robert C. Derbyshire, M. D., Artesia, N. M.
3:00-3:45 P.M.—Subject: Pain in the Arm and Shoulder.
Speaker: Earl D. McBride, M. D.
3:45-4:00 P.M.—Discussion: OPEN.
4:00 4:45 P.M.—Subject: Management of the Placental Stage of Labor and the Prevention of Hemorrhage.
Speaker: M. Edward Davis, M. D.
4:45-5:00 P.M.—Discussion: Lee Miles, M. D., Albuquerque, N. M.
8:00 P.M.—Banquet, Doctors and Their Ladies.

SATUURDAY, MAY 7th

A. D. Shuler, M. D., presiding
9:00-9:45 A.M.—Subject: Hematuris.
Speaker: T. Leon Howard, M. D.
9:45-10:00 A.M.—Discussion: OPEN.
10:00-10:45 A.M.—Subject: Rationale of Endocrine Therapy in Obstetrics and Gynecology.
Speaker: M. Edward Davis, M. D.
10:45-11:00 A.M.—Discussion: OPEN.
11:00-11:45 A.M.—Subject: Radioactive Iodine in the Treatment of Thyroid Disease.
Speaker: F. R. Keating, Jr., M. D.
11:45-12:00 Noon—Discussion: OPEN.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Thursday, May 5th

2:00-2:45 P.M.—Subject: Deafness.
Speaker: J. Mackenzie Brown, M. D., Los Angeles, Calif.
2:45-3:00 P.M.—Discussion: Maurice Spearman, M. D., El Paso, Texas.
Place: General Assembly.
3:00-4:00 P.M.—Diagnosis of Chronic Simple Glaucoma, a Symposium Conducted by: Drs. Schuster, Murphy and Peck.
Followed by Open Discussion.
4:00-5:00 P.M.—Conservative Treatment versus Surgical Treatment in Acute Congrestive and Chronic Simple Glaucoma, a Symposium Conducted by: Drs. Schuster, Murphy and Peck.
Followed by Open Discussion.

FRIDAY, MAY 6th

9:00-10:00 A.M.—Acute Sinusitis with Especial Reference to the Frontal: J. Mackenzie Brown, M. D.
Discussion: OPEN.
10:00-11:00 A.M.—Surgical Management of Acute Congestive and Chronic Simple Glaucome: Symposium Conducted by Drs. Schuster, Murphy and Peck.
Followed by Open Discussion.
11:00-12:00 Noon—Diagnosis of Otosclerosis and Recent Advances in Fenestration.
Speaker: J. E. Witcher, M. D.
Discussion: OPEN.
12:00-2:00 P.M.—Luncheon and Round Table Discussion.
2:00-3:00 P.M.—Chronic Sinusitis and Best Methods of Treatment Therein.
Speaker: J. Mackenzie Brown, M. D.
Discussion: OPEN.
3:00-4:00 P.M.—Diagnostic Problems of Strabismus.
Speaker: Weldon O. Murphy, M. D.
Discussion: Stephen A. Schuster, M. D., followed by Open Discussion.

SATURDAY, MAY 7th

9:00-10:00 A.M.—The Tonsil and Adenoid Problem: J. Mackenzie Brown, M. D.
Discussion: OPEN.
10:00-11:00 A.M.—Diagnostic Problems of Strabismus: Weldon O. Murphy, M. D.
Discussion: Howard Peck, M. D., Albuquerque, N. M., followed by Open Discussion.
9:30-11:00 A.M.—Surgical Management of Strabismus: Stephen A. Schuster, M. D.
Discussion: Weldon O. Murphy, M. D., Amarillo, Texas, followed by Open Discussion.

Mottled Enamel vs. Dental Caries

By W. E. Badger, M. D., Hobbs, New Mexico

During recent years much has been published on the subject of fluorine in drinking water and its relation to dental caries. This is a subject which should be of great interest to physicians in the Southwest, since many areas in this section contain admitted toxic amounts of fluorine in the drinking water.

The U. S. Public Health Department is at present carrying out an experiment in Newburgh, N. Y.; Grand Rapids, Mich., and Evansville, Ill. The experiment consists of adding sodium fluoride to the drinking water in the amount of 1 p.p.m. over a 10-year period. It is expected there will be a decrease in dental caries in the children who drink this water.

Apparently the public health service does not expect the occurrence of dental fluorosis in these same children who will be ingesting water containing 1 p.p.m. sodium fluoride during the period of calcification of their permanent teeth. Investigators who have done careful work on the occurrence of mottled enamel cannot agree with this view. In the opinion of one of them[1] the level of the fluorine in drinking water should not be above .01 p.p.m. and in water containing 0.9 p.p.m. 36 per cent show mottling in mild to moderate degree. Certainly if any such result is obtained in the cities mentioned, then one can imagine the feeling of parents who will find their children with permanently marked and unsightly teeth.

It would seem that more heed should have been paid to the work of investigators in the Southwest where mottled enamel is endemic, and who have consistently advised against using water with more than 0.7 p.p.m. of fluorine. It must seem to many who read the reports that the lowered incidence of caries in the fluoride areas is so slight that it does not warrant the risk of ingestion of a potentially toxic chemical. Indeed there is some evidence that the teeth of adults in these areas are abnormally diseased.[2]

1. Work to be published in an early issue of the American Journal of Pediatrics: Author, D.C. Badger, M.D.
2. Smith, M. C., and Smith, H. V.: Observations on Durability of Mottled Teeth, American Journal of Public Health. 30:1050 (Sept.) 1940.

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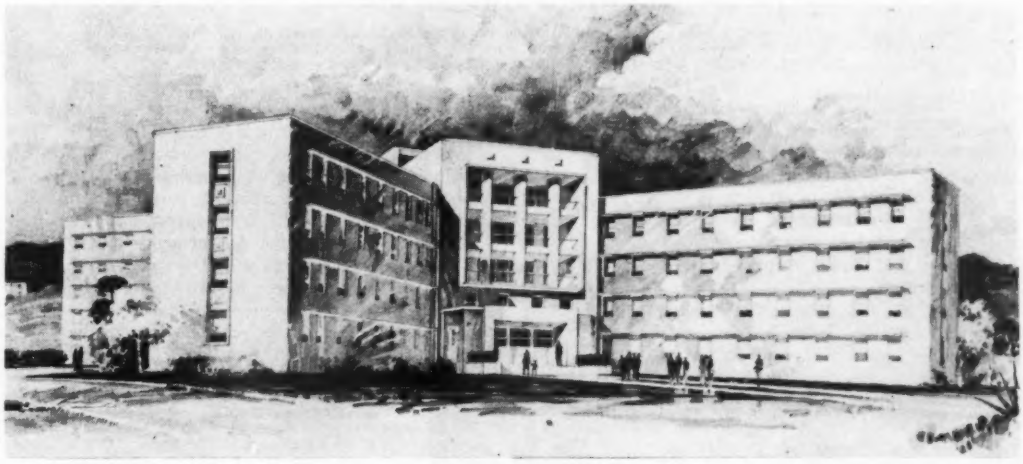
THE NEW PROVIDENCE HOSPITAL IN EL PASO



This is the architect's drawing of the new Providence Memorial Hospital. It is expected to cost at least $2,500,000 and will provide El Paso with 300 additional beds. A total of $1,400,000 has already either been raised or pledged. Currently a drive to raise the remaining $1,100,000 is under way.

Ground recently was broken for the new $2,500,000 Providence Hospital, scheduled to add 300 beds to help alleviate the short supply which has plagued El Paso. This city, a rapidly growing commercial center, actually has lost or is scheduled to lose 100 beds through the demolition of two of its older hospitals.

The new hospital will be built at Blacker and Oregon Streets, adjacent to the Texas College of Mines campus. It is hoped that some day it may become a teaching hospital and eventually lead to the founding of the Southwest's first medical school at the College of Mines.

The main surgical suite of the new Providence will contain four major operating rooms; and a two-way, patient-nurse intercommunication system will be installed at the patients' bedside.

Other facilities will include an obstetrical floor with nurseries; an isolation wing for contagious diseases; a special pediatric wing; the Masonic Memorial Wing; the crippled children's ward; a laboratory and research department; and many other units essential to the operation of the most modern hospitals.

In future years the hospital area may be expanded into a multi-million dollar medical center, a move that will make it possible for El Paso more efficiently to serve a territory with a population of over 300,000. However, present efforts, a drive to raise an additional $1,100,000, are concentrated on the new hospital, the immediate urgent need.

Every attention within the new building will be given to the comfort and recovery of the patients. From the moment he enters the modern and handsome lobby until discharged, his surroundings will instill confidence.

A barber shop and a flower shop will be part of the main floor of the hospital, as well as a modern chapel, which has been designed to suit the religious tastes of all, whether Catholic, Protestant or Jew.

The new Providence Hospital's additional supply of beds will help ease El Paso's shortage of health facilities; but many such building programs must be completed before the West Texas metropolis can match the recommendation of the American Hospital Association of five beds for each 1,000 of population. Currently El Paso has 2.06 beds for each 1,000.

Looking to the future, however, the Providence Board of Directors has charted the expansion of years and even decades. These plans include a children's hospital, a chronic disease hospital, an out-patient clinic, a medical school and hospital allied with the College of Mines, and resident facilities to house young doctors and internes who serve the hospital during their training period.

Most important and first will come a top rank nurses' school, operated in conjunction with Texas College of Mines. This would be a great asset not only to Providence but to the entire Southwest; for schools of this type have never yet come close to catching up with the stringent shortage of nurses which began even before the war.

Providence Memorial Hospital is incorporated as a non-profit, non-sectarian, educational hospital and is managed by leading business men who serve on its Board of Directors without pay. Because it will also serve in the training of young physicians and medical students, the hospital was granted $500,000 by the Federal government. In addition $900,000 was raised or pledged in an earlier drive, leaving $1,100,000 as the objective in the current campaign to bring the total to the required $2,500,000.

Physicians who will serve as members of the staff, will donate their services; and neither board members nor physicians will receive special privileges of hospital service.

THE USE OF ANTIBIOTICS IN SURGERY*

By Jonathan E. Rhoads, M. D.

Associate Professor, School of Medicine, University of Pennsylvania; Surgeon, Hospital of the University of Pennsylvania; Senior Surgeon, Children's Hospital of Philadelphia; Assistant Director, Harrison Department of Surgical Research, University of Pennsylvania

Of the various factors in surgical care that have reduced mortality in the past 10 or 12 years, the sulfonamides and the antibiotics probably deserve first place. The number of antibiotics developed during this period is in excess of 500. Yet, of all of these agents, only a very few have the combination of effectiveness against infectious agents and low toxicity against human tissues that makes them valuable in systemic therapy.

J. E. Rhoads, M.D.

It was an extraordinarily fortunate circumstance that penicillin was among the first of these agents to be discovered, for few, if any, of the therapeutic agents so far discovered have such a low toxicity.

Fleming, who discovered penicillin in 1927, was slow to recognize its potentialities in human disease. Much of the credit for this must be given to Florey and Chain, who began publishing their findings in 1940, and to the long list of men who followed them in developing this field. Penicillin remains by far the most valuable of the antibiotics, but we should now consider also streptomycin, dihydrostreptomycin, aureomycin, and chloromycetin. I will speak later, but not favorably, of bacitracin and polymyxin.

Penicillin was introduced at a dosage level of 80,000 to 100,000 units per 24 hours, and most of the good results claimed for it were first obtained at this level. The current practice of using 500,000 to 1,000,000 or more units daily has resulted in a prompter and more certain response of the patient, but, I believe, in a somewhat higher incidence of skin reactions.

The mode of action of penicillin is not well understood. It is sometimes effective in controlling **in vivo** caused by organisms that it is not very effective against **in vitro**. Two examples of this are cutaneous anthrax and mixed peritonitis.

Murphy, La Boccetta, and Lockwood had occasion to treat three cases of cutaneous anthrax in 1944. In spite of the fact that the organism was relatively insensitive, all three patients rapidly improved and recovered.(1)

The great limitation of penicillin is, of course, its failure to act against the Gram negative bacilli. When it first became available, therefore, it did not seem likely to be of much value against peritonitis resulting from perforation or necrosis of hollow viscera, such as the appendix. Fauley and his collaborators(2) were the first to present animal experiments that indicated that the mortality rate of appendiceal peritonitis could be lowered substantially by giving penicillin. This has been confirmed by Zintel and his associates(3,4) in our laboratory and elsewhere. It is substantiated by the clinical report of Crile Jr.(5) and by the recent report of Robert Brown and his associates in the Annals of Surgery.(6)

Much effort in the surgical research laboratories at the University of Pennsylvania has been directed at discovering what the most effective agent or combination of agents might be in the treatment of the mixed forms of peritonitis. Sulfanilamide, penicilin, and streptomycin were used singly and in combination. In spite of its polyvalency, streptomycin alone was inferior to penicillin. Whether the combination of the two is better than penicillin alone was not clear from the animal experiments, but there are certain reasons for believing that the combination may be superior.

One reason is the finding in the laboratories of Merck and Company that many strains of organisms that become resistant to one of these two antibiotics remain sensitive to the other.

Another reason is the result **in vitro** studies by Miss Anne Nichols.(7) As Figure 1 indicates, these two antibiotics show definite synergism for some organisms. When one is attempting to destroy all organisms in a mixed culture in which some bacteria are quite resistant to the action of penicillin and some are quite resistant to the action of streptomycin, the advantages of combining them are much greater, as shown in Figure 2.

FIG. I

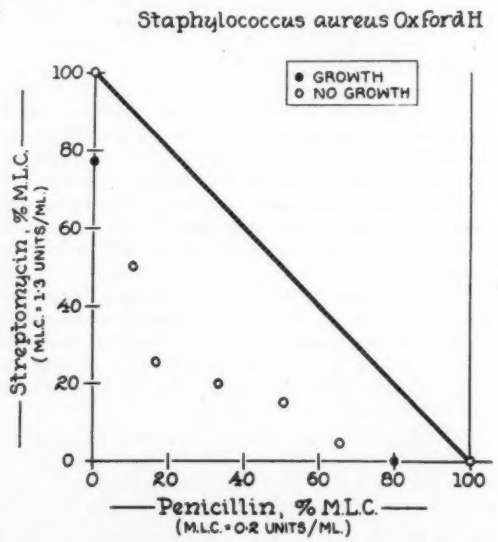


Figure 1.—Graph showing synergistic action of penicillin and streptomycin for Staphylococcus aureus (Oxford H). M.L.C.—Minimum lethal concentration (A. Nichols[7]).

*From the Harrison Department of Surgical Research Schools of Medicine, University of Pennsylvania and the Surgical Clinic of the Hospital of the University of Pennsylvania, Philadelphia.

*This paper was presented before the International Post-Graduate Medical Assembly, San Antonio, Texas, January 25-27, 1949.

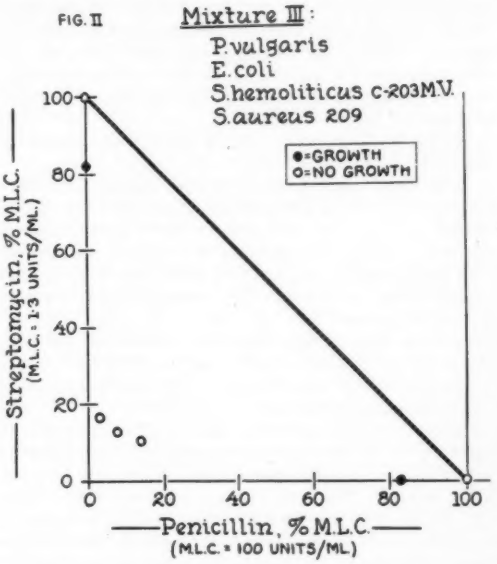


Figure 2.—Graph showing effect of combining penicillin and streptomycin on a mixed culture in terms of the minimum lethal concentration of each antibiotic when used alone. (Courtesy of Miss Anne Nichols).

Our current practice in the treatment of peritonitis or threatened peritonitis is to give 1,00,000 units of penicillin and one to two grams of streptomycin daily and then to support the patient vigorously so that the antibiotics will have time to act.

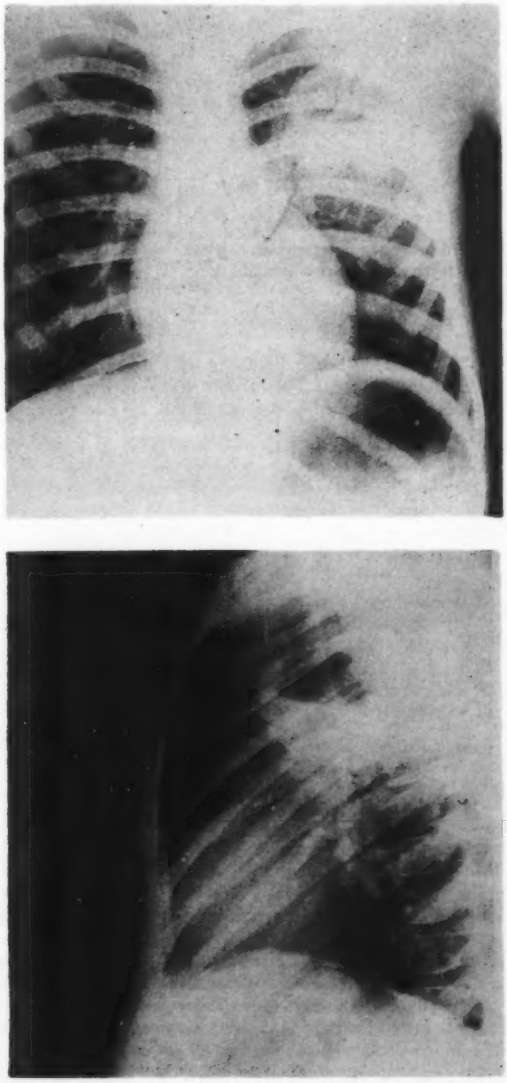
Since space does not permit a systemic review of our experiences with penicillin, I would like to summarize it briefly.

It is the most effective agent we have yet had in the treatment of boils and carbuncles. It may be injected locally in combination with procaine. Some surgeons do no more. It is our preference to do a limited excision to get rid of the necrotic tissues and to give penicillin systemically as well as locally. If patients are ambulatory, we often depend on oral penicillin in doses of 100,000 units every two or three hours. Axillary furunculosis, which used to inactivate some of our interns and nurses for five and six weeks at a time, is now, as a rule, quickly controlled with penicillin.

The results with penicillin in the treatment of chronic hematogenous osteomyelitis have depended largely on the adequacy of the surgical removal of the diseased tissue. In a series of 22 cases studied by investigators at the University of Pennsylvania[8] in which an adequate operative procedure was done, 90 per cent healed and 82 per cent were adjudged to have good results. When no operation was done, only one of eight patients had a good result. In chronic traumatic osteomyelitis, 67 per cent of the patients obtained good results when the operation was considered adequate. Poorer results followed when the surgical procedure was less satisfactory or when no operation was done.

In digitil osteomyelitis, recovery is now frequent. In a group of 11 such cases studied from the University of Pennsylvania, eight healed, and three were amputated. In retrospect, two of these cases probably had an inadequate trial of penicillin, as systemic treatment was only carried on for four and five days respectively.

A dramatic cure of a post-tonsillectomy lung abscess is shown in Figures 3 and 4. A surgeon was asked to



Figures 3a and 3b.—T. S.—Anteroposterior and lateral roentgenograms of the chest showing lung abscess before treatment.

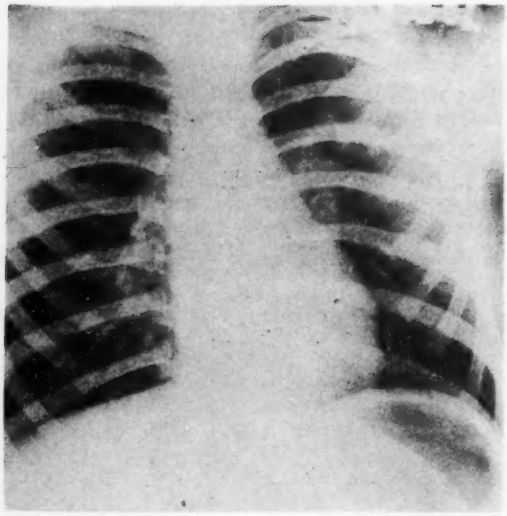


Figure 4.—T. S.—Same chest seven days later after treatment with penicillin.

see the boy about drainage of the abscess, but it was never necessary.

The drug has been of great prophylactic value in lung resection for abscess and bronchiectasis. The experience of White and his collaborators in this field is shown in Figure 5. (9)

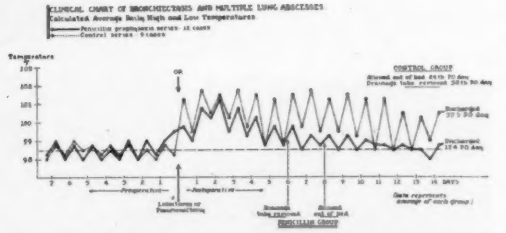


Figure 5.—Chart of mean high and low temperatures for two series of patients undergoing lung resections for suppurative lesions, showing the effect of the prophylactic use of penicillin. White, W. L. and associates.[9]

In soft tissue abscesses in osteomyelitis, Altemeier has used aspiration and local instillation of the drug successfully. White and Flippen (10) did the same thing in empyema thoracis and were successful in averting drainage in about one half of their cases. Aspirations were done daily, and as much pus as possible sucked out. A smaller quantity of saline solution containing 25,000 units of penicillin was then instilled through the same needle.

We have also cleared up breast abscesses in this way. Usually penicillin is given systemically as well. Undoubtedly penicillin is, at times, sufficiently effective so that the old dictum which states that "where there is pus, drain it" can be disregarded or honored only by aspiration. Nevertheless, our own feeling is that, in most of these cases, surgical drainage is still preferable, supplemented, of course, by antibiotic therapy. There is, of course, the objection that open drainage may permit the entrance of penicillin resistant organisms from the outside. However, if aspiration alone is tried, we feel it should be supplemented early by open drainage, unless the cavity closes very rapidly.

Mortality from carbuncles of the lip has almost disappeared.

Mortality from staphylococcus aureus septicemia, which was formerly estimated at 90 per cent, has dropped to below 15 per cent. Infections in the angle areas of the face with sinus thrombosis used to be almost always fatal. We have seen them get well with penicillin. Heparin was used as an adjuvant, but whether this is necessary is not established.

Mediastinitis is now frequently controlled. The prognosis in pericarditis is greatly improved. Many cases of meningitis due to meningococcus, streptococcus, staphylococcus, and pneumococcus recover.

Not only has penicillin had a profound effect on most of the infections which surgeons are called upon to treat, but it has also reduced morbidity and mortality from many of the common post-operative complications. At the Hospital of the University of Pennsylvania, the mortality of postoperative broncho-pneumonia dropped from 69 per cent to nine per cent following the use of sulfonamides, (11) and we feel that penicillin is still more effective. Urinary tract infections due to susceptible organisms are readily controlled, though they may recur after cessation of treatment if there are anatomical changes in the urinary tract.

Parotitis has not been as satisfactorily controlled as we had hoped, though localization of the infection seems better with penicillin therapy.

As experience with this antibiotic has increased, we have become more and more liberal in its use prophylactically. In fact, I usually insist that every patient of mine over 70 years of age receive it regularly as long as he is in the hospital.

In critical situations we still use a third hour dosage schedule, but, for the vast majority of patients, procaine penicillin is injected every eight or twelve hours in a dosage of 300,000 units per injection. The work of Altemeier has put the longer interval on a fairly solid basis. (12) Some of the oily preparations of penicillin need be given only once in 24 hours, but we have been hesitant to use them routinely because of the occasional late occurrence of sterile abscesses after the injection of other drugs in oily bases.

Streptomycin was introduced by Dr. Selman Waksman, who had been working on soil micro-organisms at Rutgers University in the Department of Agriculture for many years. (13) This drug has the great advantage of being effective against many strains of Gram negative bacteria as well as Gram positive organisms. It, therefore, has a wider spectrum of effectiveness than penicillin.

It will probably be remembered longest as the first antibiotic to achieve a place in the treatment of tuberculosis. It is specific for tularemia.

It has two great disadvantages. First, organisms build resistance against sublethal doses very rapidly. Secondly, while relatively non-toxic in therapeutic doses, it does have a specific toxic effect on nervous tissue, usually manifested first on the vestibular branch of the eighth nerve. Until the drug was employed in tuberculosis, its

danger for the eighth nerve was not recognized. However, if it is used in doses of two to three grams per day, perhaps half or more of the patients will have vestibular symptoms within four weeks. More recent experience indicates that this may be cut down substantially if the dose is restricted to one gram per day. The symptoms of vertigo, inability to focus on an object when the patient is in motion, and positive Romberg usually subside over a period of weeks or months. Barany tests generally indicate that the damage is permanent and that the apparent recovery is one of adjustment. There has been much discussion as to the site of injury. Experiments recently carried out by Winston, Lewey, Parenteau, Marden, and Cramer (14) upon cats seem definitely to indicate that the injury is central in the vestibular nuclei and that with large doses it spreads somewhat into surrounding parts of the brain. Injury was indicated by escape of toluidine blue from the circulation into the tissues.

In surgery, one of the special uses of streptomycin has been in preparing the large bowel for surgery. In Texas, I expect most physicians have followed Dr. Edgar Roth in using sulfasuxidine and more recently sulfaphthalidine for this purpose. The final answer to this problem is not yet at hand—some surgeons are now recommending a combination of drugs for this purpose. The results obtained by Zintel and his associates (15) in our laboratories using streptomycin orally are shown in Tables I, II, and III. Despite the fact that results are somewhat uncertain in any single patient with any of these drugs, it is our belief that their use has been of genuine help in carrying out resection and end-to-end anastomosis in the colon. The value of systemic chemotherapy should not be neglected either. Figure 6 shows the drop in the operative mortality in colon surgery in 1938, when we began to use sulfanilamide in these cases. It was not, however, until we had at hand the means of reducing the bacterial flora of the alimentary tract that we felt free to abandon the obstructive resection and do end-to-end anastomoses in the colon. Many of these patients now enjoy an almost afebrile convalescence.

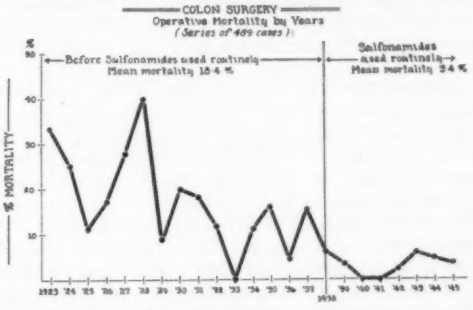

COLON SURGERY
Operative Mortality by Years
(Series of 409 cases)
%
Before Sulfonamides used routinely
Mean mortality 18.4 %
Sulfonamides used routinely
Mean mortality 2.4 %
% MORTALITY
1923 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33 '34 '35 '36 '37 1938 '39 '40 '41 '42 '43 '44 '45

Figure 6.—Annual mortality experience in a consecutive series of patients undergoing operations on the colon at the Hospital of the University of Pennsylvania. 1923 to 1945.

The recent introduction of dihydro-streptomycin promises to give all of the beneficial results of systemically administered streptomycin with a lower toxicity. Whenever we have to carry out a surgical procedure for tuberculosis, it is our custom to start one of these drugs a few days before operation and continue it until two or three weeks or more afterwards.

Some strains of B. pyocyaneus and B. proteus are sensitive to streptomycin, and the drug has been useful in urinary tract infections due to them.

The next antibiotic which became available to us for systemic use was bacitracin, a product of a particular strain of Bacillus subtilis isolated by Meleney of New York. (16) This drug is more likely to give fever than streptomycin, but we used it fairly frequently until detailed study of the renal function by Dr. Alexander Michie revealed that it was seriously nephrotoxic. (17)

Polymyxin (or aerosporin as it is called in England) has not been studied thoroughly in our laboratories, but our preliminary experience with it was disquieting, and we now regard it as too toxic to compete with several other antibiotics—at least, in its present form.

There are, however, two new antibiotics just becoming available that hold real promise in special fields. The first of these is chloromycetin, developed by Parke, Davis and Co. Chloromycetin was first obtained from Streptomyces venezuelae. It has since been crystallized, its chemical constitution determined, and it has now been synthesized so that it bridges the gap between an antibiotic and a drug. It has been given to a number of patients with typhoid fever with dramatic results. (18) In one of these cases recently treated in Philadelphia the temperature dropped to normal in 48 hours, and, to all intents and purposes, the disease was over. The drug is

TABLE I

Effect of Streptomycin and Succinylsulfathiazole on the Number of B. Coli per Gram of Feces

Agent	Before	After 8 Days	After 8 Days in 85% of Patients
Streptomycin	74,836,060,000	418,000	262
Succinyl-sulfathiazole	23,700,000,000	150,000,000	98,857

TABLE II

Effect of Streptomycin and Succinylsulfathiazole on the Number of Streptococci Fecalis per Gram of Feces

Agent	Before	After 8 Days	After 8 Days in 85% of the Patients
Streptomycin	900,500,000	77,200	0
Succinyl-sulfathiazole	769,000,000	174,500,000	141,157,833

TABLE III

Effect of Streptomycin and Succinylsulfathiazole on the Number of Clostridial Organisms per Gram of Feces

Agent	Before	After 8 Days	After 8 Days in 85% of Patients
Streptomycin	33,030,000	539,900	200
Succinyl-sulfathiazole	15,090,000	1,047,000	71,218

given orally in doses of two to six grams per day. It is recommended that in typhoid fever it should be continued five days after the fever has passed. It has also been effective in preliminary trials against five Rickettsial diseases. In twenty-two cases of epidemic typhus (R. prowazeki) treated in Bolivia, temperature and pulse returned to normal in 54 hours or less in all cases.(19) The highest dose was 3.5 grams orally. In a case of endemic or murine typhus (R. mooseri), it was also successful.(20) In scrub typhus (R. tsutsugamushi or R. orientalis), twenty-five cases were successfully treated with a dosage of 50 mg. per Kg. at first and then 0.2 to 0.3 grams every two to four hours.(21) The last seven patients in this series were given six grams in the first 24 hours of treatment and no more. In Rocky Mountain spotted fever (R. rickettsi), Pincoffs et al(22) treated fifteen cases with a dosage schedule of 75 mg. per Kg. in two or three hours, followed by 0.5 grams every three hours in adults—(one half this amount under the age of 16). The temperature returned to normal within 76 hours in all cases.

Aureomycin is a product of the mold, Actinomycetes aureofaciens, which has been developed by Lederle Laboratories. It is given orally in a dose of one to four grams per day and acts systemically. It is excreted in the urine in good concentration. It has a wide spectrum of effectiveness, though it is not as potent an agent against some of the standard pyogens as is penicillin. It is not infrequently effective against strains that are resistant to penicillin and streptomycin. The response in a 40 year old physician who had an intraperitoneal infection with a corynebacterium which was resistant to other agents is

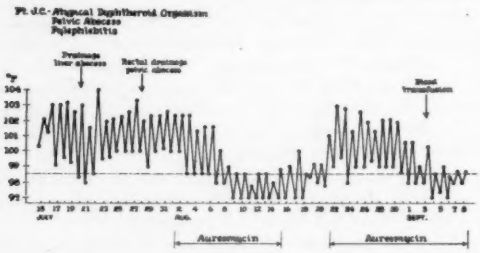


Figure 7.—Daily high and low temperatures in a patient with chronic intraperitoneal infection due to corynebacteria, showing the changes which occurred with the administration of aureomycin.

shown in Figure 7. There was no doubt in my mind that the use of the drug was the turning point in this patient's six months illness.

Aureomycin was used in three cases of typhoid fever by Dr Perrin Long and his associates(23) with good bacteriological and fair clinical results. It seems, on the basis of preliminary reports, that it will be likely to be displaced in this field by chloromycetin. Aureomycin has great potency against several of the Rickettsia, including bush typhus, Rocky Mountain spotted fever, and endemic typhus. It has also given promising results against lymphopathia venereum and granuloma inguinale. A longer period will be required to evaluate its effectiveness in patients with rectal stricture due to the former disease. In the latter disease, Wright and his collaborators(24) have used aureomycin in three cases with excellent results. These authors reported that a penile ulcer due to granuloma inguinale healed promptly after the drug was started.

It is too soon to say what the range of usefulness of this new drug may be in surgical patients, but, certainly, it can be called on for treatment of penicillin and streptomycin resistant strains of common pyogens, and it appears that it will have a special field of usefulness in Rickettsial diseases.

SUMMARY

Penicillin remains today the most valuable antibiotic for surgical patients. It has radically revised the prognosis in staphylococcus septicemia and in many infections of the meninges, the mediastinum, and the pericardium. It has had a remarkably beneficial influence in peritonitis.

In addition, it has been of great value in many minor infections, such as furuncles and carbuncles. It has improved the prognosis in hand infections and osteomyelitis. Its prophylactic use in long resections for suppurative lesions has been shown to reduce the incidence of empyema. Its value in the prevention of postoperative complications should be re-emphasized, and its prophylactic use permits great advances in geriatric surgery.

Streptomycin has been shown to have additional fields of usefulness in surgery. Dihydro-streptomycin, chloromycetin, and aureomycin now seem established as valuable antibiotics, and preliminary data on their effectiveness have been reviewed.

REFERENCES

(1) Murphy, F. D., La Boccetta, A. C., and Lockwood, J. S. Treatment of Human Anthrax with Penicillin. J.A.M.A., 126:948, 1944.
(2) Fauley, G. B., Duggan, T. L., Stormant, R. T., and Pfeiffer, C. C. The Use of Penicillin in the Treatment of Peritonitis. J.A.M.A., 126:113., 1944.
(3) Zinsser, H., Zintel, H. A., Jackson, G., and Runyeon, W. The Use of Antibiotics and Sulfonamides in the Treatment of Experimental Peritonitis. Bull. Amer. Coll. Surg., 32:249, 1947.
(4) Zinsser, H. and Zintel, H. A. Streptomycin and Penicillin in the Treatment of Experimental Peritonitis—to be published.
(5) Crile, Jr., G. Peritonitis of Appendiceal Origin Treated with Massive Doses of Penicillin. Surg., Gynec., and Obst., 83:150, 1946.
(6) Brown, R. B. and Andrus, D. L. Penicillin in the Postoperative Treatment of Peptic Ulcer with Perforation and Appendicitis with Perforation. Amn. Surg., 128:57, 1948.
(7) Nichols, A. C. Bactericidal Action of Streptomycin-Penicillin Mixtures in Vitro. Proc. Soc. Exper. Biol. and Med., 69:477, 1948.
(8) White, W. L. and Zintel, H. A.—personal communication.
(9) White, W. L., Burnett, W. E., Bailey, C. P., Rosemond, G. P., Norris, C. W., Favorite, G. O., Spaulding, E. H., Bondi, A., and Fowler, R. H. Use of Penicillin in Prevention of Postoperative Empyema following Lung Resection. J.A.M.A., 126:1016, 1944.
(10) White, W. L. and Flippen, H. F.—personal communication.
(11) Rhoads, J. E. and Ravdin, I. S. Influence of Sulfonamides on Postoperative Complications. Amn. Surg., 120:463, 1944.
(12) Altemeier, W. A. Penicillin Therapy with Prolonged Interval Dosage Schedules. Amn. Surg., 128:708, 1948.
(13) Waksman, S. A. Production and Activity of Streptothricin. J. Bact., 46:299, 1943.
(14) Winston, J., Lewey, F. H., Parenteau, A., Marden, P. A., and Cramer, F. B. An Experimental Study of the Toxic Effects of Streptomycin on the Vestibular Apparatus of the Cat. Amn. Oto., Rhin., and Laryn., 57:737, 1948.
(15) Ravdin, I. S., Zintel, H. A., and Bender, D. H. Adjuvants to Surgical Therapy in Large Bowel Malignancy. Amn. Surg., 126:439, 1947.
(16) Johnson, B. A., Anker, H., and Meleney, F. L. Bacitracin: A New Antibiotic Produced by a Member of the B. subtilis Group Science, 102:376, 1945.
(17) Michie, A. and Zintel, H. A. Nephrotoxicity of Bacitracin in Man—to be published.
(18) Woodward, T. E., Smadel, J. E., Ley, Jr., H. L., Green, R., and Mankikar, D. S. Beneficial Effect of Chloro-

mycetin in the Treatment of Typhoid Fever. Amn. Int. Med., 29:131, 1948.
(19) Payne, E. H., Knaudt, J. A. and Palacios, S. Treatment of Epidemic Typhus with Chloromycetin. J. Trop. Med. and Hyg., 51:68, 1948.
(20) Smadel, J. E., Leon, A. P., Ley, Jr., H. L., and Varela, G. Chloromycetin in the Treatment of Patients with Typhus Fever. Proc. Soc. Exp. Biol. and Med., 68:12, 1948.
(21) Smadel, J. E., Woodward, T. E., Ley, Jr., H. L., Philip, C. B., Traub, R., Lewthwaite, R., and Savoor, S. R. Chloromycetin in the Treatment of Scrub Typhus. Science, 108:160, 1948.
(2) Pincoffs, M. C., Guy, E. G., Lister, L. M., Woodward, T. E., and Smadel, J. E. The Treatment of Rocky Mountain Spotted Fever with Chloromycetin. Amn. Int. Med., 26:656, 1948.
(23) Schoenbach, E. B., Bryer, M. S., and Long. P. H. The Pharmacology and Clinical Trial of Aureomycin: A Preliminary Report. Amn. N. Y. Acad. of Science, 51:267, 1948.
(24) Wright, L. T., Sanders, M., Logan, M. A., Prigot, A., and Hill, L. M. The Treatment of Lymphogranuloma Venereum and Granuloma Inguinale in Humans with Aureomycin. Amn. N. Y. Acad. of Science, 51:318, 1948.

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TREATMENT OF FACIAL LACERATIONS AND DIAGNOSIS OF UNDERLYING PATHOLOGY

By W. W. Schuessler, M. D., and Dan N. Steffanoff, M. D., D. M. B.
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INTRODUCTION

The face and head—being the most commonly exposed part of the body—are subjected to frequent trauma from a multitude of causes. The resulting injuries vary from minor contusions, abrasions, mild or severe burns, to lacerations and avulsions of varying extents, with or without injuries of the underlying bony structures.

The introduction of high speed revolving machinery in industry, high speed motor vehicles, such as motorcycles, automobiles and airplanes, and the increased interest in the various sports, have increased the incidence and severity of bodily injuries, the face and the head having their respective increases. Home accidents also contribute a large number of maxillofacial injuries.

PURPOSE OF THIS ARTICLE

The purpose of this article is to emphasize the importance of early diagnosis of the accompanying unsuspected underlying injuries of the face and head and also to emphasize the importance of proper early treatment of the visible as well as the often hidden injuries, the neglect of which invariably results in a permanent deformity and disability.

Since the face is one of the most outstanding and prominent characteristic anatomical features in identifying the individual from millions of similar individuals, it becomes of paramount importance to the patient, who desires to maintain his identity, that every attempt be made to restore the traumatically altered face to its original recognizable physiognomy, or to effect a normal cosmetic as well as functional restoration.

DEFINITION OF TERMS

In this discussion, the term "face" will designate the anterior part of the head, namely, the forehead, the eyebrows, eye-lids, nose, mouth, cheeks, chin and the ears. The term "maxillofacial" will include in addition to deep and superficial soft tissue of the face, the underlying body architecture, namely, the parts of the frontal bones comprising the orbit, the maxillary bones, the maxillojugal components, the zygoma, the nasal bones, the nasal cartilages and the septum, and the mandibles.

CLASSIFICATION OF MAXILLOFACIAL INJURIES

For the purpose of simplicity of discussion, the maxillofacial injuries are divided into two groups, namely, the traumatic and the regional. This classification will suggest the course and the methods of arriving at the diagnosis of the possible pathological conditions that so often do not yield to simple diagnosis by a mere observation and palpation on the part of the examiner, nor to the simple diagnosis based on subjective symptoms. This classification will also suggest the therapeutic course. It is not, however, the intention of the authors to include in this discussion every possible maxillofacial injury.

A. Traumatic Classifications:

1. Impacts:
   a. with lacerations
   b. without lacerations
   c. abrasions
   d. contusions with or without hematoma
   e. fractures, simple, compound, etc.
2. Lacerations by:
   a. sharp implements
   b. dull objects
   c. dog bites
   d. human bites
3. Avulsed wounds by:
   a. impact
   b. sharp implements
4. Deformity following surgical excision for neoplasms.
5. Infections:
   a. exogenic
   b. dental origin
   c. following trauma
6. Burns:
   a. thermal (hot water, oils, flames, hot metals, etc.)

B. Regional Classification:

The regional classification of maxillofacial injuries is introduced here for the main purpose of making the examiner cognizant of a potential pathology of the underlying tissues, its symptoms and pathognomic signs beyond the grossly involved and visible topographical injury.

The point of contact of the traumatic agent to the face immediately will rule out some involvement of the distant body structures, or will suggest a probablye involvement of the underlying tissues, whether soft tissue—such as severed nerves, lacerated glands and their ducts, or fractures with or without displaced fragments of the underlying bony structures. This classification is based on the location of the injury.

1. Point of injury below the level of the mouth:

The point of traumatic contact below the level of the mouth and along the mandible definitely calls for ruling out any fracture of the mandible, or any injuries to the dental mechanisms, either on the lower or upper arch. The examination should include a thorough intra-oral inspection and palpation and a close examination of any laceration of the tongue, searching for parts of fractured crowns of normal or artificial dentures within the laceration. A fractured and posteriorly displaced symphysis mandibulae may cause a respiratory obstruction because the patient is unable to protrude his tongue voluntarily away from the pharynx. This is usually due to the posteriorly displaced origin of the genioglossus muscle, the latter being on the mental spine of the mandible on the posterior surface of the posteriorly displaced symphysis.

The mandibular arch, being a part of a circle, behaves somewhat differently from the long bones, when subjected to a blow, in that it invariably fractures in more than one location along the circle. One of the fractures

is at the site of the impact, while the second fracture is along any part of the circle. Thirty-one per cent of the mandibular fractures are double fractures. For this reason, the discovery of a single fracture line on the mandible should force the examiner to look for a second fracture line in the same side or on the opposite side, depending on the direction and force of the impact. Seventy-seven and four-tenths per cent of the double fractures occur along the mental foramen and the opposite angle of the mandible.

Ivy gives the following causes for peace time (1938) fractures of the mandible: Bare fist—49 per cent; falls—14 per cent; automobile (constantly on the increase)—8 per cent; extraction of teeth—5 per cent; football—3 per cent; and miscellaneous—21 per cent.

2. Point of injury above level of the mouth and below the eye-brows:

Because of the topographically larger area, it is self-evident that injury above the level of the mouth and below the level of the eye-brows involves proportionately a large number of anatomical structures. Here, the examiner should rule out a fracture fo the nose. Failure to reduce it in time will result in an additional loss of time for the patient later on. Moreover, the final result may not be as perfect as if originally reduced, because of the callus malunion, and also because the postponed correction calls for a great deal of operative skill, effort and time.

Recognition of the fractured maxilla and premaxilla shortly following the injury when followed by immediate proper treatment, will invariably effect a good cosmetic and functional restoration.

A depressed orbital fracture, because of a fracture of maxilla, or malar bones, when neglected beyond the regenerative period of the bone, will not only fail to yield to near normal reduction, but will incapacitate the patient permanently, unless other reconstructive procedures are undertaken in order to elevate the eye-ball and eradicate diplopia.

A blow on the cheek, anteriorly, anterio-laterally or laterally, will fracture the malar bone and the zygomatic arch, which fracture may be missed by the routine x-ray films. It is among the commonest of the fractures that pass undiagnosed within the first few months following injury.

A fracture of the mandible, even with the slightest displacement, will result in some malocclusion, which may not be evident even to the patient during the first few days following injury. When such a fracture is undiagnosed and not treated, it may result in non-union.

Fractures of the coronoid process or of the neck of the condyle, which are difficult to visualize by routine x-ray studies, should always be suspected when the patient has some subjective symptoms in the involved area or when no other reason is discovered for the present malocclusion, or trismus. When the fracture is complete, the attachment of the temporal muscle on the coronoid process rotates the fragment superiorly in the line of pull. The attachment of the external pterygoid muscle on the condyle pulls the fractured condyle downward and medially, the degree and the direction of displacement depending on the level of the fracture.

Fractures of the cusps or entire crowns are rather common findings with or without fractures of the mandible, maxilla or premaxilla.

The presence of injury to the soft tissue of the face always should suggest the necessity of determining existing motor or sensory loss and the fact of its presence or absence should be recorded in the operative findings. The parotid gland including its duct may also be lacerated, the neglect of which may result in a salivary fistula, the correction of which, very frequently, is a difficult problem. The severed nerves should be repaired if the wound is not too old and infected.

The external auricle, because of its rich blood supply, withstands extensive trauma. Subperichondreal hematoma should be drained to prevent the development of cauliflower ears. Lacerations of the auricle, no matter how severe they may appear, or even though completely avulsed or practically amputated, usually respond well to gentle debridement of skin margins and cartilage, careful suturing and a firm and evenly distributed pressure dressing. Every little part of the auricle saved will eventually shorten the reconstructive efforts on the part of the Plastic Surgeon.

Vertical lacerations of the eye-lids as a rule tend to contract and produce ectropion, because the lid margin lacks a vertical support except by the action of the weak orbicularis oculi muscle. For that reason, a careful debridement is of the utmost importance to reduce the ragged edges of the laceration and to promote rapid healing with the least amount of scar formation.

3. Point of injury at the level of and above the eye-brow:

When the force of the impact is so great as to cause a severe laceration of the forehead or the scalp, there is invariably a visible or palpable fracture on the exposed external table of the cranial cage, which may or may not be accompanied by any immediate objective or subjective neurological findings. Here, the possible delayed intra-cranial complications cannot be suppressed by merely closing the soft tissue wound. The case should be followed by a complete radiological study and a close observation.

One or both frontal sinuses may have been invaded by severe laceration and by fracture of the anterior wall of the frontal sinus.

The superior orbital arch may be depressed partially, or along its entire length, or in combination with some of the intra-orbital bony lining, resulting in the various forms of strabismus, depending on the muscles involved. Occular injuries often result from these fractures.

TREATMENT OF FACIAL SOFT TISSUE INJURIES

Here, as in injuries elsewhere on the body, treatment will be dictated by the causative agent and the extent and the age of the wound. A wound inflicted indoors with a sharp cutting implement calls for some modification in treatment as compared to the treatment of a wound inflicted outdoors and by a dirty implement. The latter calls for a therapeutic dose of tetanus antitoxin, while the former may be considered as a potentially clean wound.

Because of the extremely rich vascular blood supply of the entire face, the closure of facial wounds differs from closure of wounds anywhere else on the body, in that the former may be closed over a longer post-traumatic period, extending even up to 48 hours, depending on the appearance of the wound and the judgment of the operator. Debridement here plays a more important role because of the limited amount of tissue and because

of the constant exposure of the face to daily observation. A poor closure of the wound, resulting in a disfiguring scar, because of improper debridement, may have a demoralizing effect on the patient and also will stand out as a constant discredit to the operator, to haunt him and his reputation.

Lacerations about the eye-brows, the eye-lids and the lips should merit special mention because of the too frequently encountered poor postoperative results, namely, improper alignment of the continuity either of the hair line, mucous membrance or vermilion border. The eye-brows should never be shaved either as a preoperative procedure in an elective surgery around the eye, or in an emergency repair of the eye-brow itself. Shaving of the eye-brow invariably results not only in a displacement of lacerated tissues, but also in a cosmetic objection, since the growth of the eye-brow is a slow process. In repair of these structures, a correct alignment is of prime import.

In lacerations about the face, every effort should be made to locate and remove all foreign bodies.

Following a gentle debridement for the removal of the ragged and devitalized skin margins, using tissue hooks and a sharp scalpel instead of mouse-toothed tissue forceps and scissors, hemostasis should be controlled, and then only the severed underlying vital structure should be repaired before undertaking the closure of the wound. The closure should be accomplished in layers, using either 4-0 plain catgut, or white cotton No. 80 or 120, in order to prevent dead space and accumulation of tissue fluids, which are prone to become infected, especially in a wound contaminated because of its age. If the wound is not infected, when the tissue fluids are well organized, they produce deep seated scars, which when they contract later on, distort the perfectly sutured margins and perfectly healed suture line. The type of suture material has little effect on the final outcome of the healed skin margins. It is the caliber of the needle and the suture material, and the manner in which they are used that determine the cosmetic appearance of the scar.

The least visible suture line is produced by the use of the least traumatizingn needles, small caliber sutures (black silk, stainless steel, or horse hair), tissue hooks, and by undermining the skin margins in order to relieve tension on the skin sutures. Vertical mattress sutures offer a better retention than simple interrupted sutures, and at the same time, they evert the skin margins. Properly employed subcutaneous closure relieves all the tension on the skin sutures and offers their earlier removal. The suture should approximate the skin margins without strangulating the tissue within its loop.

More extensive wounds may require shifting or rotating flaps for their closure, while still larger wounds, with loss of soft tissue substance, may require immediate skin grafting.

Wounds resulting from human and dog bites should have a thorough debridement. The use of chemotherapy and biologics should be entertained in the treatment of every wound of the face.

DO NOT OVERLOOK MAXILLOFACIAL FRACTURES

While it is not within the scope of this paper to elaborate upon the detailed management of maxillofacial fractures, the authors wish to stress the importance of the possibility of an existing fracture in the presence of a wound, which recognition is of great significance preoperatively. The wound may offer the best avenue for the three dimensional visualization of the fracture, as well as the only logical approach for its reduction. To attempt its diagnosis and treatment following the closure of the wound, a practice commonly encountered, results in delayed diagnosis and reduction—often over a period of weeks or months.

A clinically demonstrated or diagnosed maxillofacial fracture should be confirmed by x-ray films preoperatively, not only as a means of arriving at a better therapeutic plan, but also as medico-legal evidence of the extent of the injury, regardless of the reason for the legal complication. A post-operative x-ray film of a properly reduced fracture is always a satisfaction, not only to the patient, but also to the operator. Also, it is a definite tangible protection to the operator, whether in or out of court. In ordering x-ray films, be specific as to the view desired, as indicated by the suspected pathology. Unless the suspected or involved bone is clearly individualized on the film by the various roentgenologic positional techniques, one should place little confidence in the negative roentgenologic reports.

In order to appreciate the symptoms and signs of maxillofacial fractures and their appropriate application in the diagnosis of the bone involved, the various forms of fractures are here mentioned: greenstick, simple or closed, compound or open, comminuted, impacted and depressed, and possible rotation of small fragments. It is self-evident that not all the fractures will demonstrate the entire series of symptoms and findings given below; however, the fracture will demonstrate some combination of these signs and symptoms:

1. Pain—aggravated by movement or palpation.
2. Tenderness on pressure over the fracture or pressure along the bone involved.
3. Disability—loss of function—if function could normally be demonstrated.
4. Numbness—damage to sensory nerve.
5. Salivation—stimulation of salivary glands.
6. Discoloration — extravascular blood visible through skin and mucosa.
7. Deformity—due to distortion of normal topographical anatomy.
8. Mobility of stationary bone or abnormal mobility of articulated bone is a pathognomic sign of fracture.
9. Crepitus—also a pathognomic sign, but avoid demonstrating it for the purpose of diagnosis (invariably it is painful and traumatizing).
10. Palpable line of fracture, except in greenstick fracture, rule out existing old fracture by history.

SUMMARY

1. A new classification of maxillofacial injuries is discussed.

2. The treatment of soft tissue laceration of the face is outlined.

3. The importance of suspecting and diagnosing maxillofacial fractures is stressed, giving the symptoms and signs of fractures in general. The necessity of confirming or ruling out any fractures by roentgenologic study prior to repairing a facial wound is also stressed. A negative roentgenologic report should not be relied upon as

conclusive evidence of non-existing fractures, unless each suspected bone is individually visualized by the various roentgenelogic positional techniques.

REFERENCES

1. Vander Velde, K. M. Surgical Technique for Facial Lacerations. U. S. Naval Medical Bulletin 46:1415-1416, September 1946.
2. Young, Morris N. Maxillofacial Fractures—Report of 157 Cases. Arch. Otolaryngology, 45:688, June 1947.
3. Alexander, John E. Early Treatment of Maxillofacial Battle Casualties. Arch. Otolaryngology, 45:637, June 1947. (421 Cases).
4. Campbell, Hoyle H. A Method in the Management of Multiple Facial Fractures. Surgery, 20:204, August 1946.
5. Seely, Rt. Ch. Reconstructive Surgery of the Dehiscent Parotid Duct and Dehiscent Peripheral Facial Nerve. Am. J. Surg., 73:551, May 1947.
6. Kelin, D. Classification of Maxillofacial Injuries. Pl. & Reconstr. Surgery, 2:133, March 1947.
7. Adams, Milton. The Use of Neighboring Tissues in the Correction of Extensive Facial Deformity. Plastic & Reconstructive Surgery, 2:105, March 1947
8. Jenkins, P. H. Subtootal Replacement of Skin of the Face. Annals of Surgery, 122:1042, December 1945.
9. Ivy, R. H., and Curtis, L. Fractures of the Jaw. Lea & Febiger, Philadelphia, Penn. 1938.
10. Sparkman, R. S. Cotton Sutures in Surgery of Warfare Surgery, 17:73, January 1945.
11. Byars, Louis T. Free Full Thickness Skin Graft. S.G.O., 75:8, July 1942.

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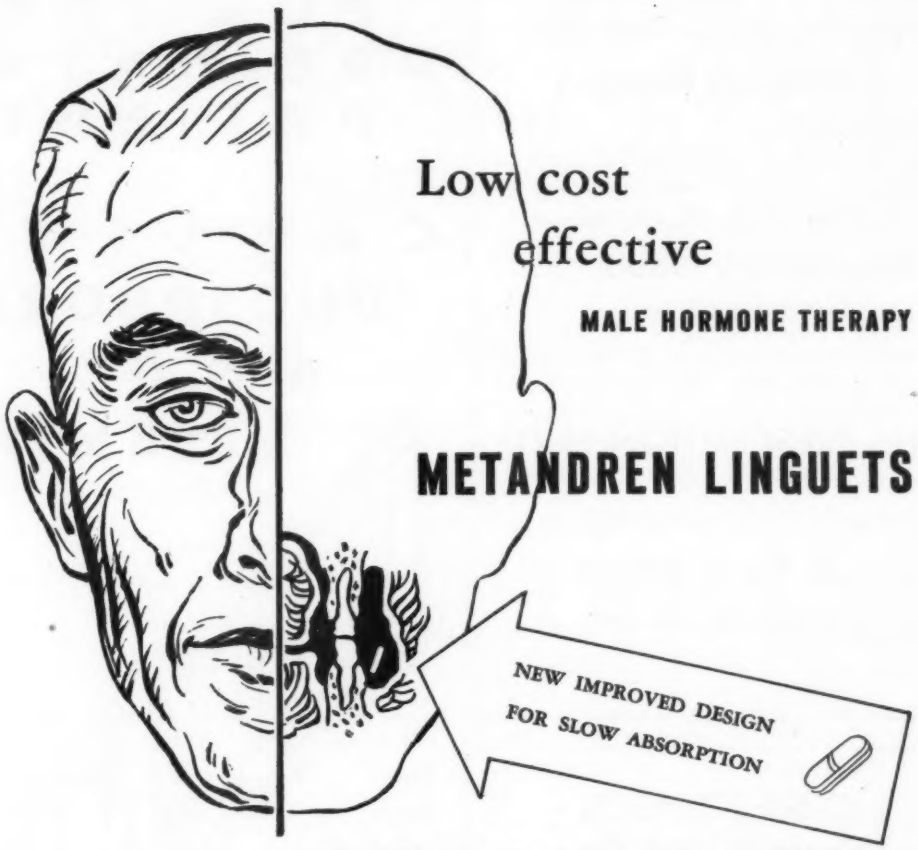

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1. Habel, J. M., Jr.: Va. Med. Monthly, October 1948.

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